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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/898,124

07/05/2001

Quanbo Zou

IME01-001

2288

28112

7590

12/26/2002

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EXAMINER

SIEW, JEFFREY

ART UNIT

PAPER NUMBER

1637

DATE MAILED: 12/26/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/898,124

Applicant(s)

ZOU ET AL.

Examiner

Jeffrey Siew

Art Unit

1656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-18 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 19, 20, 24, 25 is/are rejected.
- 7) ☒ Claim(s) 2, 4, 21-23 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II in Paper No. 4 is acknowledged and found convincing. Group I and II are hereby rejoined.

Specification

2. The drawing references e.g. R_Chip_X (page 11) are unclear as to what they mean. Correction and/or clarification is required.

The term "vias" on page 7 second paragraph is unclear in meaning.

Claim Objections

3. Claims 2 recites improper Markush language. Proper markush language should recite selected from the group consisting of X,Y and Z. Proper correction is required.

Drawings

4. Formal Drawings were submitted 7/5/01 to the Office. However, the Drawings do not appear in the file wrapper. The office respectfully requests courtesy copies of the Formal Drawings.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1-3, 5, 6, 19, 24 & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baier et al (US5,939,312 Aug. 17, 1999) in view of Hunicke –Smith US6132,996 (Oct. 17, 2000).

Baier et al teach a miniaturized multi chamber thermocycler (see whole doc. esp. abstract) which contains a heat sink (see figure 3, 41). They teach a chip (Figure 4) containing reaction chamber symmetrically overlies a single block. They teach that the chip is made of poor heat conductivity such as glass plates and SiO₂ which would provide for greater conductivity within a chamber than between chambers (see col.3 lines 1-15). They teach thermal conductive of 0.6 to 6 W/Km (see col. 3 line 23). They teach up to 6000 sample chambers each with 0.1ul volume in one 4" inch wafer which would fall within the dimension range (see col.4 lines 5-10)

Baier et al do not teach sensor or a printed circuit to allow independent control

Hunicke –Smith teach a printed circuit (see col.11 line 45-60). They also teach temperature sensor (see col. 9 lines 32-35).

One of ordinary skill in the art would have been motivated to apply Hunicke-Smith's printed circuits to Baier et al's device in order to control independent and multiple PCR reactions. Hunicke-Smith state that multiple and separate reactions may be performed (see col. 10 line 43-50). It would have been prima facie obvious to apply Hunicke-Smith's printed circuit to Baier et al's device in order to perform a plurality of PCR reactions amplifying different targets simultaneously.

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6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baier et al (US5,939,312 Aug. 17, 1999) in view of Hunicke-Smith US6132,996 (Oct. 17, 2000) in view of Northrup et al (US5,639,423 June 17, 1997).

The teachings and suggestions of Baier et al and Hunicke-Smith are described previously.

Baier et al do not teach a syringe.

Northrup et al teach a syringe to add samples (see Figure 1).

One of ordinary skill in the art would have been motivated to apply Northrup et al's technique of adding sample through a syringe to the combined invention of Baier et al and Hunicke-Smith in order to sterilely add samples. It would have been prima facie obvious that adding sample through a syringe would provide efficient and sterile addition of PCR samples to the combined PCR invention of Baier et al and Hunicke-Smith.

SUMMARY

7. Claims 7-18 are allowable. There is no prior art that teach or suggest the claimed apparatus with solder bumps extending downwards from array to provide electrical connections and means for uniformly pressing chip against blocks or the claimed device with heater and sensor on first block partially covered and partially exposed by second block.

Claim 4 is objected to for depending on rejected claim. There is no prior art that teach or suggest the claimed device with soft layer softer than 100 and hard than 1 on Shore D Durometer.

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Claims, 21, 22 & 23 & 26 are free of the prior art but objected to for depending on rejected claim. There is no prior art that teach the claimed device with chip sidewalls extending downward to touch printed circuit board forming airtight enclosure, or a claimed device with covering case and rods that extend downward to press down on chip or a claimed device with fixture in an inverted orientation with additional heat sink and printed circuit or a claimed device with a disposable chip.

The closest prior art is Baier et al who teach a chip for multiple samples but do not teach or suggest solder bumps, Shore D softness, chip sidewalls, covering case with rods, additional printed circuit in inverted orientation or a disposable chip.


CONCLUSION

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Siew whose telephone number is (703) 305-3886 and whose e-mail address is Jeffrey.Siew@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner is on flex-time schedule and can best be reached on weekdays from 6:30 a.m. to 3 p.m. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703)-308-1119.

Any inquiry of a general nature, matching or filed papers or relating to the status of this application or proceeding should be directed to the Tracey Johnson for Art Unit 1637 whose telephone number is (703)-305-2982.

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Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Center numbers for Group 1600 are Voice (703) 308-3290 and Before Final FAX (703) 872-9306 or After Final FAX (703) 30872-9307.


JEFFREY SIEW
PRIMARY EXAMINER
12/22/02

December 22, 2002